

## RETRACTILE PEN

### FIELD OF THE INVENTION

5 The present invention relates to a retractile pen, and more particularly to a pen including slidably connected front and rear casings, so that the pen may be shortened for storage, or extended for comfortable holding during writing.

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### BACKGROUND OF THE INVENTION

There are a variety of retracting structures designed for pens. For example, US Patent No. 6,276,855 B1  
15 discloses a retractile pen, a casing of which may be shortened to enable positioning of the pen in a small pocket, or extended to enable easy holding and comfortable writing.

20 It is desirable to develop a new retractile pen that may be easily operated to a retracted state for storage or an extended state for writing.

### SUMMARY OF THE INVENTION

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A primary object of the present invention is to provide

a retractile pen that includes axially slidably connected front and rear casings, an internal sleeve slidably mounted in the rear casing to hold an ink cartridge, a front portion of which is extended into the front casing, and an adjusting button located above a guide slot provided on the rear casing to connect to the internal sleeve via a stem portion of the button extended through the guide slot. When the adjusting button is depressed, it may be moved along the guide slot to bring the internal sleeve to a rear or a front locating hole formed at rear and front end of the guide slot, respectively, so as to hold the ink cartridge in a retracted or extended position. Meanwhile, when the adjusting button is depressed, the rear casing may be pushed toward or away from the front casing to shorten or increase an overall length of the pen, respectively.

The retractile pen of the present invention further includes a clip connected to the rear casing. The clip is provided with an axially extended slide slot corresponding to the guide slot on the rear casing. The adjusting button is located at an outer side of the clip with the stem portion extended through the slide slot and the guide slot to connect with the internal sleeve. When the adjusting button is moved to the front end of the slide slot to hold the internal sleeve in

place and the ink cartridge in the extended position, the stem portion stops the clip from opening to clamp the pen to a pocket, protecting the pocket from being smudged by an exposed writing tip of the ink cartridge.

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The adjusting button may have a selected size and shape to enable convenient operation by a user, and specific patterns may be printed on a top of the adjusting button as an advertisement.

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#### BRIEF DESCRIPTION OF THE DRAWINGS

The structure and the technical means adopted by the present invention to achieve the above and other objects  
15 can be best understood by referring to the following detailed description of the preferred embodiments and the accompanying drawings, wherein

Fig. 1 is an exploded perspective view of a retractile  
20 pen according to the present invention;

Fig. 2A is an assembled perspective view of the retractile pen of Fig. 1 in a fully retracted state for storage;

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Fig. 2B is an assembled perspective view of the

retractile pen of Fig. 1 in a half-extended state;

Fig. 2C is an assembled perspective view of the retractile pen of Fig. 1 in a fully extended state for  
5 writing;

Fig. 3A is a sectioned side view of Fig. 2A;

Fig. 3B is a sectioned side view of Fig. 2B; and  
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Fig. 3C is a sectioned side view of Fig. 2C.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

15 Please refer to Figs. 1, 2A, and 3A, in which a retractile pen 1 according to the present invention is shown. As shown, the retractile pen 1 mainly includes a front casing 10, a rear casing 20, an internal sleeve 30, and an adjusting button 40.

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The front casing 10 includes a diameter-reduced rear section 11, around a rear end of which a first stop flange 12 is provided to radially inward and outward project from the rear end.

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The rear casing 20 is provided at a front end with a

second stop flange 21 that radially inward projects from the front end. The rear casing 20 is axially slidably mounted around the diameter-reduced rear section 11 of the front casing 10, such that the second stop flange 21 abuts against the first stop flange 12 when the front casing 10 is fully moved forward relative to the rear casing 20, preventing the front casing 10 from completely separating from the rear casing 20, as shown in Figs. 3B and 3C. An axially extended guide slot 22 is provided on the rear casing 20. Front and rear ends of the guide slot 22 are formed into two locating holes 23, 24 having a diameter slightly larger than a width of the guide slot 22.

The internal sleeve 30 is axially slidably mounted in the rear casing 20 behind the diameter-reduced rear section 11 of the front casing 10. The internal sleeve 30 includes a diameter-reduced front section 31 adapted to forward extend into the rear section 11 of the front casing 10, and a diameter-expanded rear section 33. A third stop flange 32 is provided around a front end of the front section 31 to radially outward project therefrom. The third stop flange 32 is adapted to abut against the first stop flange 12 when the internal sleeve 30 is rearward moved relative to the front casing 10, and thereby prevents the internal sleeve 30 from

completely separating from the front casing 10, as shown in Figs. 3A and 3B. A hollow front cap 13 is connected to an open front end of the front casing 10, so that an ink cartridge 50 having a rear portion inserted in the diameter-reduced front section 31 of the internal sleeve 30 and a front portion extended into the front casing 10 may be forward moved to expose a writing tip 51 from the front cap 13. A spring 14 is mounted on the ink cartridge 50 behind the front cap 13. The rear section 33 of the internal sleeve 30 is fitly received in the rear casing 20 to smoothly slide axially. A shoulder portion is formed between the expanded rear section 33 and the reduced front section 31, and is adapted to abut against the first stop flange 11 when the internal sleeve 30 is fully moved forward relative to the rear casing 20, as shown in Fig. 3C.

The rear section 33 of the internal sleeve 30 is provided at one side with a radially extended hole 34, in which a hollow retaining block 35 having a restoring spring 36 mounted therein is received. The retaining block 35 includes a diameter-reduced top 351 having a configuration corresponding to that of the front and rear locating holes 23, 24 of the guide slot 22 on the rear casing 20. When the internal sleeve 30 is axially moved in the rear casing 20, the retaining block 35

and the reduced top 351 are normally located below the guide slot 22, and when the reduced top 351 reaches at the front or the rear end of the guide slot 22, the reduced top 351 is allowed to project from the expanded front or rear locating hole 23, 24 and thereby stops the internal sleeve 30 from moving forward or rearward any further.

The adjusting button 40 includes a stem portion 41 that is extended through the guide slot 22 on the rear casing 20 into the diameter-reduced top 351 of the retaining block 35, and thereby brings the internal sleeve 30 to move along with the adjusting button 40.

A rear cap 60 is connected to a rear end of the rear casing 20 with a clip 61 forward extended from one side of the rear cap 60 to fitly press against an outer surface of the rear casing 20 and fixedly located immediately above the guide slot 22. The clip 61 is provided with an axially extended slide slot 62 corresponding to the guide slot 22. The adjusting button 40 is located on an outer side of the clip 61 with the stem portion 41 extended through the slide slot 63 into the guide slot 22 and the reduced top 351 of the retaining block 35.

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Please refer to Figs. 2A and 3A. When the pen 1 is not

in use and to be stored, the adjusting button 40 connected to the retaining block 35 is depressed and fully moved rearward along the slide slot 62, allowing the reduced top 351 of the retaining block 35 to upward project into the expanded rear locating hole 24 and thereby holds the internal sleeve 30 to a rearmost position in the rear casing 20. At this point, the ink cartridge 50 is in a retracted position and the writing tip 51 is completely located in the front cap 13, and the rear casing 20 may be pushed toward the front casing 10 until the second stop flange 21 at the front end of the rear casing 20 is abutted on the front casing 10. The pen 1 will have a shortest possible length in this state and may be conveniently put in a pocket.

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Please refer to Figs. 2B and 3B. When it is desired to use the pen 1 to write, first depress the adjusting button 40 to disengage the reduced top 351 of the retaining block 35 from the rear locating hole 24 on the rear casing 20, and then pull the rear casing 20 rearward to expose the rear section 11 of the front casing 10, so as to extend the length of the pen 1. Meanwhile, the depressed adjusting button 40 is gradually moved along the guide slot 22 toward the front locating hole 23, and the ink cartridge 50 is still in a retracted position without exposing the writing



tip 51 from the front cap 13.

Please refer to Figs. 2C and 3C. When the depressed  
adjusting button 40 is further moved to locate the  
5 retaining block 35 below the front locating hole 23  
and released, the internal sleeve 30 is moved to a most  
front end of the rear casing 20 with the reduced top  
351 of the retaining block 35 upward engaged with the  
front locating hole 23, allowing the writing tip 51  
10 of the ink cartridge 50 to expose from the front cap  
13 and be held to this extended position. The pen 1  
in the extended state has an increased length to enable  
comfortable holding of the pen 1 for writing. An  
elastic force from the spring 14 makes the ink cartridge  
15 50 firmly located between the internal sleeve 30 and  
the front cap 13. When the pen 1 is operated to return  
to the retracted state, a rearward restoring force from  
the spring 14 enables the internal sleeve 30 to move  
rearward more easily.

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As can be clearly seen from Figs. 2C and 3C, when the  
adjusting button 40 is held to the most front end of  
the slide slot 62 on the clip 61 through engagement  
of the reduced top 351 of the retaining block 35 with  
25 the front locating hole 23 on the guide slot 22, the  
stem portion 41 of the adjusting button 40 forms a stopper

at a front end of the clip 61. When a user intends to clamp the pen 1 in the extended state to a pocket using the clip 61, the stem portion 41 of the adjusting button 40 at the front end of the slide slot 62 stops the clip 5. 60 from opening for use. Therefore, the risk of a smudged pocket due to the exposed writing tip 51 may be effectively eliminated.

The adjusting button 40 may be designed according to 10 body engineering to facilitate easy and comfortable push or operation thereof. Moreover, patterns may be selectively printed on a top of the adjusting button 40 to provide an advertising effect.